Review of the State of Sonora for Consideration of
Classical Swine Fever (CSF)-Free Status

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A site visit was conducted to verify the CSF-free status of the State of Sonora, Mexico and included evaluating the veterinary infrastructure of Mexico's Division of Animal Health, observing and discussing their disease control programs, and evaluating their diagnostic capabilities and surveillance programs. The visit was made to fulfill APHIS' commitment to the North American Free Trade Agreement Committee on Sanitary and Phytosanitary Measures' recommendation to further assess Sonora's freedom of CSF.

The U.S. Department of Agriculture review team consisted of APHIS representatives Dr. Michael David, Senior Staff Veterinarian, National Center of Import and Export, Dr. Arnold Taft, Senior Staff Veterinarian, Swine Health Staff, and Dr. Kelly Preston, Associate Director, Operational Support, International Services. Dr. Alejandro Perera, International Services, Mexico City, accompanied the team during part of the visit. The team was joined by a Canadian team, consisting of Dr. William Warrel, International Negotiations-Export, and Dr. Sylvie Farez, Special Projects, both with the Animal Health Division of Agriculture Canada.

The team met with or visited the following sites from October 24-28, 1994:

1. Meeting with Mexican federal veterinary officials at their headquarter offices in Mexico City.

2. Meeting with Mexican federal delegate, sub-delegate and State officials in Hermosillo, Sonora.

3. Visit with the Regional Pork Association representatives in Ciudad Obregón, Sonora.

4. Visit a commercial swine operation near Ciudad Obregón, Sonora.

5. Visit an "accredited" laboratory (Pecuarius Laboratories) in Ciudad Obregón, Sonora.

6. Visit an internal movement control station (Las Guásimas), in Guaymas, Sonora.

7. Breakfast meeting with local pork producers, Hermosillo, Sonora.

8. Visit a large commercial swine operation and a vehicle disinfection station near Hermosillo, Sonora.

9. Visit an "accredited" laboratory (Lancer Laboratory) in Hermosillo, Sonora.

10. Visit the federally inspected slaughter plant, ALPRO, in Hermosillo, Sonora.

11. Meeting with Mexican Federal and State officials, and Sonoran pork producers at the delegate offices in Hermosillo, Sonora.

The following Mexican Federal officials from the central offices accompanied the team during the visit:

Dr. Angel Omar Flores
Director de Control Cuarentenario
Dirección General de Salud Animal

Dr. Armando Mateos
Director de la Comisión Mexico-Estados Unidos para la Prevención de Fiebre Aftosa y Otras Enfermedades Exóticas

Dr. Miguel Iraztorza
Asesor del Subsecretario de Ganadería

Dr. Cristóbal Zepeda
Jefe, Unidad de Evaluación de Riesgo y Epidemiología

Dr. Salvador Solís
Director de Campañas Zoosanitarias
Dirección General de Salud Animal

Dr. Arturo Cabrera
Jefe, Campaña Nacional contra la Fiebre Porcina Clásica
Dirección General de Salud Animal

State of Sonora (Federal People):

Subdelegate: Dr. Horacio Huerta

Background

For almost 5 years Mexico has requested that the United States recognize the State of Sonora free of classical swine fever. During this same period several U.S. delegations have visited the State of Sonora to evaluate its CSF status. In each case, while these delegations did not dispute Sonora's claim to freedom from the disease, they always found some areas of concern and made recommendations to address them.

The last case of CSF in Sonora was reported in 1985, and vaccination against the disease was discontinued in 1989. Since then, Mexico has reported no occurrence of CSF in Sonora. Several factors have contributed to Sonora's apparent success in eradicating and remaining free of CSF. These are:

1. Implementation of movement controls by the Animal Health Division.
2. Active and aggressive participation by the private sector.
3. The existence of only a relatively small number of integrated producers (about 170 -- farrow to finish) who produce over 90% of the State's pork.
4. Lack of any significant production in the eastern and northern parts of the State and very little production in the neighboring States of Chihuahua, Sinaloa, and Baja California.
5. The existence of natural geographic barriers.

Site visit objectives

This site visit was made to clarify various items that were not evident from the material Mexico had presented to APHIS and Agriculture Canada last June and September, 1994. Specifically, clarification and/or additional information was needed on the following items:

1. Veterinary infrastructure -- federal authority over and relationships/links with State and local animal health officials.

2. Compliance and enforcement.

3. Surveillance methods and associated laboratory support.

4. Marketing patterns and identification.

The Classical Swine Fever Program in Mexico

Until recently, the program primarily involved vaccination and movement control. Surveillance (and testing) has been passive, and any samples that are submitted have come only from cases that are reported as suspect. There are efforts to make the program more active by enlisting more States to participate in the campaign. In addition, States that move into the "eradication" phase of the campaign (that is, when vaccination ceases), must establish an emergency response team). The strategy of the program, however, is focused on strict movement controls and complete vaccination coverage of commercial herds. Surveillance activities have relied primarily on reporting suspicious cases and on investigating such cases.

Animal Health Structure

Because of existing confusion, one of the items the team needed to more clearly understand was the structure of Mexico's animal health organization. At the federal level, animal health functions are organized into a "normative" or policy setting function, and an "operational" function. Policies are made by the central offices in Mexico City, which in turn may be implemented by the "sub-delegate" (federal) offices at the local (state) level. Although communication exists, Federal animal health officials at the central level have no direct authority over the federal authorities (sub-delegates) at the local level. It is evident that the success of any given program depends, to a large extent, on the existing relationships between the central offices and the federal sub-delegate officers appointed to each State, as well as between government officers (any level) and the local livestock industry associations.

In the State of Sonora, a unique collaborative relationship is enjoyed between the pork producer associations, the Livestock Sub-delegate office, State Animal Health Officials, and Federal Animal Health Officials located in the central offices. The eradication of CSF from Sonora was largely due to the dedication and persistence of the industry and to its willingness to work with animal health officials to ensure that the disease is not re-introduced into the State.

The Structure of the Swine Industry in Sonora

Compared to the rest of the country, the swine industry in Sonora is unique. It is made up of only about 174 producers who own about 136,000 sows with an annual production of about 2.4 million market hogs. Commercial production is similar to that seen in the United States; however, it is highly integrated throughout the State. The average herd has about 600 to 800 sows.

Since all commercial farms are farrow to finish, there is no feeder pig market in Sonora. The industry owns and operates its own slaughter facilities which are under federal inspection. Ninety five percent or more of the production is commercial. Small swine units cannot compete, and essentially, do not exist in Sonora. There may be a small number of backyard farms, however, any production from these is for local (family) consumption. Furthermore, to control the proliferation of such backyard operations, the industry provides a buy-out program to purchase such hogs.

The swine industry in Sonora is well organized and, for economic and animal health reasons, is committed to the production of quality hogs.

Biosecurity Practices of the Commercial Swine Industry

The swine industry implements very good biosecurity measures at all levels -- from parent herds to processing plant. At the commercial farms we visited, individuals must shower-in and shower-out to enter and exit the complex. Vehicles and equipment are disinfected. Specific personnel are assigned to each house, clean clothing and boots are provided, and footbaths are located at the entrance of each barn. Detailed production records are maintained, necropsies are routinely performed on site, and serum profiles to monitor vaccine effectiveness is done at regular intervals.

Surveillance for Classical Swine Fever

To verify the CSF free status of Sonora, in 1991, Mexico conducted an initial serological survey during which over 50% of the commercial operations were sampled. This survey was followed by a more intensive survey done in 1993 where about 25% of the operations were sampled.

The initial survey was designed to determine the presence or absence of CSF and not to determine prevalence. The assumption was made that if CSF were present in Sonora, the disease would exist at a prevalence of 30%. Therefore, to detect this high prevalence, a sample of only 5 animals per operation would be sufficient to detect disease. The second survey, which sampled 30 animals per farm, assumes a prevalence of 10%.

While no CSF was found (that is, no virus was isolated), the surveys had some limitations related to sample size and the assumptions made regarding the prevalence of the disease in Sonora. If the prevalence of infection is less than 10%, the sampling level that was followed would not have been adequate to detect the disease. In addition, although hog production in Sonora is almost entirely commercial, biasing some of the samples to high risk animals (such as those in small backyard holdings, if any) would have provided added assurance that no CSF virus field strains are circulating.

Given that such a large proportion of all commercial herds was sampled, it is likely that the surveys did truly confirm the absence of the virus. However, our analysts would need to review this interpretation.

Laboratories and Diagnostic Capabilities for Classical Swine Fever

The team visited two private laboratories in Sonora. Both laboratories were approved to conduct specific program work - in this case, serological work for pseudorabies; however neither was performing any CSF work.

Although there were no laboratory diagnosticians on the team, a general review of Mexico's diagnostic capabilities for CSF follows. There are nine Regional laboratories as well as seven "specialized" or support laboratories which have the ability to conduct the ELISA test for CSF. Due to low demand, only four of the regional and four of the support laboratories conduct testing with any frequency. These eight laboratories also have the necessary equipment and trained personnel to conduct the immunofluorescence test. In addition, five of these eight laboratories can also do the immunoperoxidase test.

In 1994 only five laboratories did any testing for CSF (a total of 3752 tests had been performed to date), and one of these, the Regional Laboratory in Mérida, Yucatán, conducted more than 67% of all these tests. Since a given laboratory may have performed more than one test on a sample, the total number of samples submitted to date for 1994 is probably less than 3000, a number that is too low to support an active national campaign.

In addition to the nine Regional Laboratories and seven support laboratories, there are two National reference laboratories -- CENAPA and CENASA. CENAPA approves biologics, conducts residue testing, and does much of the parasitology work, while CENASA serves as the diagnostic reference center and provides for the registry of reagents. CENASA has viral isolation capabilities for CSF and attempts isolations on about 20 to 40 suspect cases each year. Recently, CENASA has been testing anywhere from five to ten thousand serum samples a year for CSF. Most of these samples are collected from the surveys after a State advances to the eradication and free phases of the program. However, most of the diagnostic work done at this laboratory is bacteriological.

The Exotic Animal Disease Commission (EADC) laboratory, which receives 25 - 30 tissue samples a year from suspect cases, attempts to isolate CSF virus from such samples.

Without a laboratory expert, the team did not assess their cell culture techniques or their ability to distinguish positive screening samples.

Conclusions and Recommendations

Overall the team's impression is for a recommendation of CSF-free status. Mexico's existing animal health infrastructure is both manageable and functional, and in Sonora, the relationship and collaboration that exists between government officials at all levels and the industry is excellent.

All evidence available to us indicates that Sonora is free CSF. The State has had no clinical, pathological, or laboratory confirmation of CSF for at least nine years. However, there are areas of concern and to address these, we recommend the following:

Identification:

* that SARH establish a national swine identification system to facilitate the traceback of suspect cases identified at slaughter, auction markets or other points of concentration.

    * Note: in the case of Sonora, with so few producers, and with cull pigs (boars ans sows) apparently moving directly from farm to slaughter, adding a premises identification to the ear tags of sows and boars would simplify traceback work.

Surveys and surveillance:

* that a carefully designed follow-up survey to detect disease (or to prove that the disease is not present) be conducted. This would require an expected prevalence of at least less than 5% at a 95% confidence level.

* that part of the survey focus on the few small private operations and backyard herds -- this segment of the industry is usually the most difficult to control, but would give the best indication of viral activity, if any.

* that routine surveillance procedures (serological) for cull hogs, particularly cull breeding stock at TIF and municipal slaughter plants be established.

Laboratory support and capability:

* that the diagnostic capability of those laboratories doing most of the diagnostic work on CSF be assessed.

* that laboratories be capable of accurately diagnosing most swine diseases and of processing a reasonably large number of cases. Given the size of the industry in Mexico, too few samples are being submitted to the laboratories.

* Note: Sonora needs to have a laboratory capable of quickly screening serum samples for CSF

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